

REMARKS

Summary of the Amendment

Upon entry of the present Amendment, Claims 1, 5 and 8 will have been amended, Claims 10 - 16 will have been added, and Claims 4 and 7 will have been cancelled without prejudice. Accordingly, claims 1-3, 5, 6 and 8-16 are currently pending.

Summary of the Official Action

In the subject Office Action, the Examiner has rejected Claims 4, 5, 7 and 8 based upon purported informalities therein, and Claims 1-9 over the art of record. By the present Amendment and remarks, Applicant submits that the rejections have been overcome, and respectfully requests reconsideration of the outstanding Office Action and the allowance of the present application.

Objection to Claims

Claims 5 and 8 are objected to by the Examiner. Claims 5 and 8 have been amended as suggested by the Examiner. In particular, in each of Claims 5 and 8, "chip" has been deleted and replaced with -- semiconductor --.

Traversal of Rejection Under 35 U.S.C. § 112, Second Paragraph

Applicant traverses the rejection of Claims 8 and 9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner contends that in Claim 8, lines 6-8, the phrase "at least one connecting bar portion extending from each of the pad portions of the outer set includes a bump land formed thereon" is unclear as to how the connecting bar portion extending from the pad portions of the outer set includes a bump land formed thereon when they are previously identified as the pad portions of the inner set.

The Applicant respectfully disagrees. Claim 8 states, *inter alia*,

"the pad portions of the leads are segregated into an outer set and an inner set;

the pad portions of the inner set each include a bump land formed thereon; and

the at least one connecting bar portion extending from each of the pad portions of the outer set includes a bump land formed thereon.”

Applicant submits that Claim 8 particularly points out and distinctly claims the invention. In particular, Figure 2 depicts an exemplary embodiment of the invention having sixteen pad portions 20 arranged in a four by four matrix. Of these sixteen pad portions 20, four pad portions 20 (the inner set) are circumvented by the remaining twelve pad portions 20 (the outer set). Each of the four pad portions 20 of the inner set is clearly shown as including a bump land 32 formed thereon. The remaining bump lands 32 (twelve total) are formed on respective ones of the connecting bars portions 22 which extend to respective ones of the twelve pad portions of the outer set. Therefore, the Examiner’s statement that the connecting bar portions which include bump lands are identified as the pad portions of the inner set is in error.

Accordingly, Applicant requests that the Examiner reconsider and withdraw the rejection of Claims 8 and 9 under 35 U.S.C. § 112.

Traversal of Rejection Under 35 U.S.C. § 102(b)

1. *Over Shin et al.*

Applicant traverses the rejection of Claims 1-3 and 8-9 under 35 U.S.C. § 102(b) as being anticipated by SHIN et al. (U.S. Patent 5,866,939) [hereinafter “SHIN”].

By the present Amendment, independent Claim 1 has been amended to describe each of the leads as including a pad portion and a connecting bar portion which is connected to the pad portion. As further recited in amended Claim 1, at least some of the leads each include a bump land formed on the second surface thereof upon the pad portion, with at least some of the leads each including a bump land formed on the second surface thereof upon the connecting bar portion.

Applicant respectfully submits that SHIN fails to disclose at least the above-noted features of the present invention. While it appears that SHIN may teach using solder bumps to connect a semiconductor chip to pad portions of leads (Figures 1A, 1B), SHIN does not teach or suggest any leads having a bump land formed on a connecting bar portion thereof.

Moreover, SHIN does not teach or suggest a semiconductor package having some leads which each have a bump land formed on a pad portion thereof and some leads which each have a bump land formed on a connecting bar portion thereof, as recited in amended Claim 1.

Because SHIN lacks at least the above-noted features of the present invention, Applicant submits that SHIN fails to disclose each and every feature recited in amended Claim 1, and that the Examiner has failed to establish an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(b). Therefore, Applicant submits that the Examiner's rejection of at least independent Claim 1 is improper and should be withdrawn.

Furthermore, Applicant submits that Claims 2, 3, 5, 6, 8 and 9 are allowable at least for the reason that these claims depend from allowable base Claim 1 and recite additional features that further define the present invention.

Accordingly, Applicant requests that the Examiner reconsider and withdraw the stated rejection under 35 U.S.C. § 102(b) and indicate that Claims 1-3, 5, 6, 8 and 9 are allowable over the art of record.

2. Over JP '405

Applicant traverses the rejection of Claims 1-3 and 8-9 under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent Laid-Open Publication No. JP-7-312405 [hereinafter "JP '405"].

Applicant submits that JP '405 fails to disclose at least the above-noted features of independent Claim 1 as amended. While JP '405 appears to teach the use of plurality of solder bumps to connect a semiconductor chip to the top surfaces of a plurality of leads, it does not teach or suggest any lead having separate and distinct pad and connecting bar portions. Nor is there any teaching or suggestion in the JP'405 reference of the semiconductor device having some leads which each include a bump land formed on a pad portion thereof and some leads which each include a bump land formed on a connecting bar portion thereof.

Because JP '405 fails to disclose at least the above-noted features of the present invention, Applicant submits that JP '405 fails to disclose each and every feature recited in amended Claim 1, and that the Examiner has failed to establish an adequate evidentiary basis

to support a rejection of anticipation under 35 U.S.C. § 102(b). Therefore, Applicant submits that the Examiner's rejection of at least independent Claim 1 is improper and should be withdrawn.

Furthermore, Applicant submits that Claims 2, 3, 5, 6, 8 and 9 are allowable at least for the reason that these claims depend from allowable base Claim 1 and recite additional features that further define the present invention.

Accordingly, Applicant requests that the Examiner reconsider and withdraw the stated rejection under 35 U.S.C. § 102(b) and indicate that Claims 1-3, 5, 6, 8 and 9 are allowable over the art of record.

Traversal of Rejection Under 35 U.S.C. § 103(a)

3. ***Shin in view of Baba***

Applicant traverses the rejection of Claims 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over SHIN in view of Baba et al. (U.S. Patent No. 5,969,426) [hereinafter "BABA"].

BABA teaches (see Figure 13) the upper surface of the lead pattern 7, except for the region bonded to the bonding layer 6, being covered with a protective film 21 made of an electrically insulating material such as polyimide or a solder resist.

The Examiner admits that SHIN does not disclose each of the leads having a protective layer formed on the second surface thereof other than for a prescribed region including the bump land.

The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the leads of SHIN to each include a protective layer formed on the second surface thereof other than for the prescribed region including the bump land, such as taught by BABA, in order to prevent the diffusion of the bumps into the lead pattern and to control the configuration of the bumps.

However, BABA does not teach or suggest a semiconductor package having some leads which each have a bump land formed on a pad portion thereof and some leads which each have a bump land formed on a connecting bar portion thereof, as recited in independent Claim 1 as amended. And as noted above, SHIN fails to disclose or even suggest these particular features of Claim 1. Therefore, since neither SHIN nor BABA discloses or

suggests these features of the invention, no proper combination of these documents can render unpatentable the asserted combination of features recited in at least independent Claim 1 as now amended.

Furthermore, Applicant submits that Claim 6 is allowable at least for the reason that it depends from allowable base claims and recites additional features that further define the present invention.

Accordingly, Applicant requests the Examiner reconsider and withdraw the rejection of Claims 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over SHIN in view of BABA, and indicate that these claims are allowable over the art of record.

4. JP '405 in view of Baba

Applicant traverse the rejection of Claims 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over JP '405 in view of Baba et al. (U.S. Patent No. 5,969,426) [hereinafter "BABA"].

BABA teaches (see Figure 13) the upper surface of the lead pattern 7, except for the region bonded to the bonding layer 6, being covered with a protective film 21 made of an electrically insulating material such as polyimide or a solder resist.

The Examiner admits that JP '405 does not disclose each of the leads having a protective layer formed on the second surface thereof other than for the prescribed region including the bump land.

The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the leads of JP '405 to each include a protective layer formed on the second surface thereof other than for the prescribed region including the bump land, such as taught by BABA, in order to prevent the diffusion of the bumps into the lead pattern and to control the configuration of the bumps.

However, BABA does not teach or suggest a semiconductor package having some leads which each have a bump land formed on a pad portion thereof and some leads which each have a bump land formed on a connecting bar portion thereof, as recited in independent Claim 1 as amended. And as noted above, JP'405 fails to disclose or even suggest these particular features of Claim 1. Therefore, since neither JP'405 nor BABA discloses or suggests these features of the invention, no proper combination of these documents can

render unpatentable the asserted combination of features recited in at least independent Claim 1 as now amended.

Furthermore, Applicant submits that Claim 6 is allowable at least for the reason that it depends from allowable base claims and recites additional features that further define the present invention.

Accordingly, Applicant requests the Examiner reconsider and withdraw the rejection of Claims 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over JP'405 in view of BABA, and indicate that these claims are allowable over the art of record.

Newly Submitted Claims are Allowable

Applicant submits that newly presented independent Claim 10 and new Claims 11-16 dependent thereon are allowable over the art of record for the same reasons discussed above in relation to Claims 1, 2, 3, 5, 6, 8 and 9. Thus, Applicant requests that the Examiner indicate such allowance in the next official communication to the Applicant.

CONCLUSION

The Applicant respectfully submits that each and every pending claim of the present invention meets the requirements for patentability, and respectfully requests the Examiner to indicate the allowance of such claims.

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicant's invention as recited in claim 1-3, 5-6, and 8-16. The applied references have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein is respectfully requested and now believed to be appropriate.

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If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

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